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Effect of mechanical activation on compactibility of metal hydride materials

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### Abstract

The most common hydrogen storage alloys (TiFe, Mg<sub>2</sub>Ni and LaNi<sub>5</sub>) were chosen for studying the effect of high energy ball milling (HEBM) on the ability of intermetallic powders to form bulk compact samples (pellets) by solid-state bonding without binder. The role of internal energy accumulated in the material during activation treatment on formation of contact surfaces between the particles was considered. It was shown that the consolidation of the intermetallic hydrogen storage alloys prepared by HEBM allows obtaining porous bulk nanostructured samples which demonstrate simplified hydrogen activation procedure, higher thermal diffusivity and good durability after multiple absorption-desorption cycles.

**Keywords:** High energy ball milling; Intermetallic compounds; Hydrogen storage

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